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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/752,735	01/07/2004	Shyam Suri	CISCP845	4738

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AKA CHAN LLP / CISCO  
900 LAFAYETTE STREET  
SUITE 710  
SANTA CLARA, CA 95050

EXAMINER
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CHANG, RICHARD

ART UNIT	PAPER NUMBER
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2616

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/23/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<p align="center"><b>Office Action Summary</b></p>	<p>Application No.</p> <p>10/752,735</p>	<p>Applicant(s)</p> <p>SURI, SHYAM</p>	
	<p>Examiner</p> <p>Richard Chang</p>	<p>Art Unit</p> <p>2616</p>	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 September 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 7-31 is/are rejected.
- 7) ☒ Claim(s) 5-6 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments, filed 09/29/2006, have been fully considered but they are not persuasive. Examiner does not withdraw the obviousness rejection. The following comments fully address applicant's argument with respect to the rejection.

-- Applicant appears to argue the limitation of "any response is sent from a destination node to indicate that intermediate node do not have a forwarding problem as recited in claim 1 (See Applicant's Remarks, page 11, last paragraph). Reinshmidt et al. (US patent application publication No. US 2002/0150041 A1) further teaches that the internet Control Message Protocol (ICMP) packet as a common ping packet and under normal communication conditions the ping packet reaches the destination node and returns to the source node as an indication for the problem free communication path (See page 2, paragraph [0025]). In particular, under the common "Ping process" and normal communication conditions, the destination node may returns updated ping packet to the source node as an indication for the problem free communication path. As such the limitation of "any response is sent from a destination node to indicate that intermediate node do not have a forwarding problem" in claim 1 is met.

-- Applicant appears to argue that Bays (US patent application publication No. US 2003/0204619 A1) does not teach the limitation of "removing a message from a path at a destination node" as recited in claim 1 (See Applicant's Remarks, page 12,

last paragraph). Bays further teaches that the "traceroute process" terminates the message from the path at the destination node by terminate the probing sequence in a given path in an autonomous system with ICMP response (See Fig. 2, page 7-8, paragraph [0074-0075]). As such the limitation of "removing a message from a path at a destination node" in claim 1 is met.

-- Applicant appears to argue that Desineni et al. (US patent application publication No. US 2003/0145105 A1) does not teach the limitation of "initiate a process to identify a source of the forwarding problem when the message is not received from the destination node" (See Applicant's Remarks, page 14, 3rd paragraph). Desineni et al. further teaches that the source node (200) determining whether a response to the message (trace reply) is received from the destination node (204) in normal case or under abnormal conditions initiating a process (retransmitting request via neighbor nodes via a path) to identify a source of the forwarding problem when it is determined that the response to the message is not received (timed out) from the destination node (204) after time out period (See Fig. 2, page 3, paragraph [0027]). As such the limitation of "initiate a process to identify a source of the forwarding problem when the message is not received from the destination node" is met.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1,14,19,25,30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over US patent application publication No. US 2002/0150041 A1 ("Reinshmidt et al.") in view of US patent application publication No. US 2003/0204619 A1 ("Bays").

Regarding claims 1,14,19,25,30 and 31, Reinshmidt et al. teach a method (most commonly in a software implementation) for detecting a forwarding problem within an autonomous system (12), the autonomous system (12) having a plurality of nodes including a source node (A2), an intermediate node (C...), and a destination node (B2) (See Fig. 1), comprising:

initiating a message (initiating a ping) from the source node (A2 in autonomous system 12), the message being arranged to be sent to a message destination that is an external address (11a) that is not an address located within the autonomous system (12),

forwarding the message from the source node (A2) along a path (C,D,...), the path being arranged to pass from the source node (A2) to the external address (11a) via the intermediate node (C,D,...) and the destination node (B2 in autonomous system 12),

receiving the message on the destination node (B2 in autonomous system 12), wherein a portion of the path (C,D,...) between the source node (A2 in autonomous system 12) and the destination node (B2 in autonomous system 12) is a first path segment (14), and

initiating a response (target reply for pin message) from the destination node (B2 in autonomous system 12), the response being arranged to be sent along the first path segment (14) from the destination node (B2 in autonomous system 12) to the source node (A2 in autonomous system 12), wherein the response (for ping message) is arranged (implicitly) to indicate that the intermediate node (C,D,...) does not have a forwarding problem (See Fig. 1, page 5, paragraph [0073] - page 6, paragraph [0074]),

wherein the path is a best path between the source node (A2 in autonomous system 12) and the external address (11a) (See Fig. 1, page 8, paragraph [0101]), and

wherein a number of nodes through which the path segment passes between the source node and the destination node as an indication (field in packet) is stored in the message (See Fig. 14, page 10, paragraph [0135] - [0142]).

Reinshmidt et al. teaches substantially all the claimed invention but did not disclose expressly the particular application involving limitations of "removing the message from the path at the destination node".

Bays teaches a method, apparatus and system facilitating determination based on the network path metrics and removing the message from the path at the destination node by the "traceroute process" to terminate the message from the path at the destination node by terminate the probing sequence in a given path in an autonomous system with ICMP response (See Fig. 2, page 7-8, paragraph [0074-0075]).

At the time the invention was made, therefore, it would have been obvious to one of ordinary skill in the art to which the invention pertains to combine Bays with Reinshmidt et al. in order to obtain a software based method for optimizing a forwarding

path within an autonomous and to take advantage of terminating the probing sequence at last intermediate system in a given path in an autonomous system.

The motivation to do so would have been to terminate the probing sequence at last intermediate system in a given path in an autonomous system, as suggested by Bays in page 7-8, paragraph [0074-0075].

4. Claims 2-4, 7-13, 15-18, 20-24 and 26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over US patent application publication No. US 2002/0150041 A1 ("Reinshmidt et al.") in view of US patent application publication No. US 2003/0204619 A1 ("Bays") and further in view of US patent application publication No. US 2003/0145105 A1 ("Desineni et al.").

Regarding claim 8, as discussed above, Reinshmidt et al. and Bays teach substantially all the claimed invention but did not disclose expressly the particular application involving limitations of "determining whether a response to the message is received from the destination node and initiating a process to identify a source of the forwarding problem when it is determined that the response to the message is not received from the destination node".

Desineni et al. teaches a method, apparatus obtaining information about paths terminating at a subject node for packets wherein source node (200) determining whether a response to the message (trace reply) is received from the destination node (204) in normal case or under abnormal conditions initiating a process (retransmitting request via neighbor nodes via a path) to identify a source of the forwarding problem

when it is determined that the response to the message is not received (timed out) from the destination node (204) after time out period (See Fig. 2, page 3, paragraph [0027]).

At the time the invention was made, therefore, it would have been obvious to one of ordinary skill in the art to which the invention pertains to combine Desineni et al. with Reinshmidt et al. and Bays in order to obtain a software based method for optimizing a forwarding path within an autonomous and to take advantage of source node determining whether trace reply is received from the destination node and initializing a request via neighbor nodes via a path to identify a source of the forwarding problem when it is determined that the response to the message is timed out from the destination node.

The motivation to do so would have been to determine at source node whether trace reply is received from the destination node and initializing a request via neighbor nodes via a path to identify a source of the forwarding problem when it is determined that the response to the message is timed out from the destination node, as suggested by Desineni et al., in page 3, paragraph [0027].

Regarding claims 2, 15, 22 and 26, these claims have limitation that is similar to those of claims 1, 14, 19 and 25 and Reinshmidt et al. teach that the external address is substantially specified in the message as the message destination (See page 2, paragraph [0025]), thus it is rejected with the same rationale applied against claims 1, 14, 19 and 25 above.

Regarding claims 3, 16, 23 and 27, these claims have limitation that is similar to those of claims 1, 14, 19 and 25 and Reinshmidt et al. teach that the source node is a



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first edge node (A2) of the autonomous system (12) and the destination node is a second edge node (B2) of the autonomous system (12) (See Fig. 1, page 5, paragraph [0073]), thus it is rejected with the same rationale applied against claims 1, 14, 19 and 25 above.

Regarding claims 4, 13 and 24, these claims have limitation that is similar to those of claims 1, 8 and 19 and Reinshmidt et al. teach the steps of

- identifying the path (HOP addresses 1..n),
- determining a number of nodes (hops) through which the path segment passes between the source node and the destination node, and
- storing an indication in the message (header), the indication being arranged to indicate a number of nodes through which the path segment passes between the source node and the destination node (See Fig. 13, page 9-10, paragraph [0116-0133]),

thus it is rejected with the same rationale applied against claims 1, 8 and 19 above.

Regarding claim 7, this claim has limitation that is similar to those of claim 1 and Reinshmidt et al. teach that the path is a best path between the source node and the external address (See page 8, paragraph [0101]), thus it is rejected with the same rationale applied against claim 1 above.

Regarding claims 9-10 and 20-21, these claims have limitation that is similar to those of claims 8 and 19 and Reinshmidt et al. teach that sending a new message from the source node to the intermediate node along the path the new message being of substantially the same type as the message and the message is a traceout (ping)

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message (See page 2, paragraph [0025]), thus it is rejected with the same rationale applied against claims 8 and 19 above.

Regarding claim 11, this claim has limitation that is similar to those of claim 9 and Reinshmidt et al. teach that the external address is substantially specified in the message as the message destination (See page 2, paragraph [0025]), thus it is rejected with the same rationale applied against claim 9 above.

Regarding claim 12, this claim has limitation that is similar to those of claim 9 and Reinshmidt et al. teach that the source node is a first edge node (A2) of the autonomous system (12) and the destination node is a second edge node (B2) of the autonomous system (12) (See Fig. 1, page 5, paragraph [0073]), thus it is rejected with the same rationale applied against claim 9 above.

Regarding claims 17-18 and 28-29, these claims have limitation that is similar to those of claims 14 and 25, thus it is rejected with the same rationale applied against claims 14 and 25 above.

### ***Allowable Subject Matter***

5. Claims 5-6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and if no art rejection can be applied.

### ***Reason for indicating Allowable Subject Matter***

6. The following is an examiner's statement of reasons for allowance:

The prior art along or in combination fails to teach or make obvious the following limitations:

“wherein forwarding the message from the source node along a path includes receiving the message on a first node of the plurality of nodes, the first node being arranged to substantially alter the indication to indicate a number of nodes through which the path segment passes between the first node and the destination node” as recited in the dependent claim 5.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Chang whose telephone number is (571) 272-3129. The examiner can normally be reached on Monday - Friday from 8 AM to 5 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wing Chan can be reached on (571) 272-7493. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*rk*  
rk

Richard Chang  
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Art Unit 2616

  
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